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Transmitted herewith for filing is the patent application of

Applicants: Riggins, et al.

Title: System And Method For Globally Accessing Computer Services

Enclosed are:

- ☒ 35 pages of specification, claims and abstract.
- ☒ 10 sheets of ☒ informal ☐ formal drawing(s).
- ☒ A declaration and power of attorney.
- ☒ An assignment transmittal.
- ☐ An assignment of the invention to:  
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PATENT

# SYSTEM AND METHOD FOR GLOBALLY ACCESSING COMPUTER

## SERVICES

### BACKGROUND OF THE INVENTION

#### 5 1. Field of the Invention

This invention relates generally to computer networks, and more particularly to a system and method for globally accessing computer services.

#### 10 2. Description of the Background Art

The internet currently interconnects about 100,000 computer networks and several million computers. Each of these computers stores numerous application programs for providing numerous services, such as generating, sending and receiving e-mail, accessing  
15 World Wide Web sites, generating and receiving facsimile documents, storing and retrieving data, etc.

A roaming user, i.e., a user who travels and accesses a workstation remotely, is faced with several problems. Program designers have developed communication techniques for enabling  
20 the roaming user to establish a communications link and to download needed information and needed service application programs from the remote workstation to a local computer. Using these techniques,

the roaming user can manipulate the data on the remote workstation and, when finished, can upload the manipulated data back from the remote workstation to the local computer. However, slow computers and slow communication channels make downloading large files and programs a time-consuming process. Further, downloading files and programs across insecure channels severely threatens the integrity and confidentiality of the downloaded data.

The roaming user alternatively can carry a copy of all potentially needed information and all potentially needed application programs. However, maintaining a true copy of a database is a cumbersome process which often results in a data inconsistency problem. Therefore, a system and method are needed to enable multiple users to access computer services remotely without consuming excessive time, without severely threatening the integrity and confidentiality of the data, and without compromising data consistency.

SUMMARY OF THE INVENTION

The present invention provides a system and method for communicating through a computer network. The system includes a master server, service engines and clients, each equipped with a communication engine for establishing communications links. The system further includes a browser for receiving applet information corresponding to a service performed by one of the service engines from the server, and an applet engine for using the applet information to control user interface I/O of the service. The master server may confirm access privileges before allowing clients to access a service. The communications engine receives configuration data which are used to configure the client components such as the operating system, the web browser, the applets, etc. to enable communication with the service engine and to provide a user-specific user interface to the client. It will be appreciated that the system may be stored on a floppy disk or hard drive.

The method includes establishing a communications link between a client and a server, receiving applet information by the client from the server, establishing a communications link between the client and a service using the applet information, and directing user interface I/O control of the service to the client using the applet information. Establishing a communications link may include

confirming access privileges. The method may further include receiving configuration data, and using the configuration data for configuring the client components such as the operating system, the web browser, the applets, etc. to enable communication with the  
5 service engine and to provide a user-specific user interface to the client.

The system and method use web browser technology to enable multiple users to access computer services remotely. Furthermore, the system and method use applet technology to enable users to  
10 access computer services without consuming excessive time, without severely threatening the integrity and confidentiality of the data, and without compromising data consistency. Still further, the system and method use configuration data to enable users to obtain a consistent interface from any remote terminal.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram illustrating a roaming-user network access system in accordance with the present invention;

FIG. 2 is a block diagram illustrating details of the remote client  
5 of FIG. 1;

FIG. 3A is a block diagram illustrating details of the master server of FIG. 1;

FIG. 3B is a block diagram illustrating details of the configuration data of FIG. 3A;

FIG. 4 is a block diagram illustrating details of each local client  
10 of FIG. 1;

FIG. 5 illustrates an example graphical user interface of web page as maintained by the web page engine of FIG. 1;

FIG. 6 is a flowchart illustrating a method for globally accessing  
15 a particular computer service;

FIG. 7 is a flowchart illustrating details of the FIG. 6 step of initiating execution of a service on the local client;

FIG. 8 is a flowchart illustrating alternative details of the FIG. 6 step of initiating execution of a service on the local client; and

FIG. 9 is a flowchart illustrating details of the FIG. 6 step of  
20 providing service access to the remote client user.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 is a block diagram illustrating a roaming-user network access system 100, in accordance with the present invention. System 100 includes a network of computers, referred to herein as an "internet" 140, connected via a master server 130 to a local network 120. A first local client 110 and a second local client 160 are addressably connected via the local network 120 to the master server 130. A remote client 150 is connected via the internet 140 to the master server 130. Another server 166 is also connected via the internet 140 to the remote client 150, to the master server 130 and to the local clients 110 and 160.

The first local client 110 includes a first service engine 115 for providing a first computer service, such as calendaring, e-mail, paging, word-processing or the like, to a user. The second local client 160 includes a second service engine 165 for providing a second computer service to a user. Service engines 115 and 165 are described in greater detail with reference to FIG. 4. The remote client 150 includes a client engine, an example of which is an applet-based web browser 155 which is configured for communicating with the internet 140 and for reading and executing applets. Examples of web browsers 155 include the Netscape<sup>TM</sup> web browser produced by the Netscape Corporation, the Internet Explorer<sup>TM</sup> web browser

produced by the Microsoft Corporation, or the Java™ Developers Kit 1.0 web browser produced by Sun Microsystems, Inc. While the illustrated client engine is a web browser 155, those skilled in the art will recognize that other client engines could be used in accordance  
5 with the present invention. Although “applets” are being described with reference to the Java™ distributed environment produced by Sun Microsystems, Inc., “applets” correspond to all downloadable and executable or interpretable programs for use in a distributed environment such as in the ActiveX™ distributed environment  
10 produced by the Microsoft Corporation.

The master server 130 includes a web page engine 133 for maintaining and providing access to an internet web page which is enabled to forward applets 136 to the web browser 155 of the remote client 150. A user can select a particular service which  
15 corresponds to one of the applets 136, thereby causing the web browser 155 of the remote client 150 to initiate execution of the corresponding applet 130. Execution of the applet 130 causes the appropriate service engine 115 or 165 to execute the particular service or access an already executing service. It will be appreciated  
20 that executing a service may include directing Input/Output (I/O) control of a service application program, such as an e-mail



application program, a paging application program or a word-processing application program, to the remote client 150 user.

The master server 130 further includes configuration data 137, which the remote client 150 can download to gain access to the  
5 desired service and to configure the functionality, look and feel of the web browser 155. The configuration data 137 may include operating system settings such as TCP protocol data and the domain name server address, user preferences, bookmarks, services, service addresses, etc. Each user preferably uploads unique configuration  
10 data 137 to the master server 130 in order to obtain similar functionality, look and feel from any web browser 155.

Similar to the local clients 110 and 160, the master server 130 may include a service engine 138 for providing access to a third computer service, and server 166 may include a service engine 167  
15 for providing access to a fourth computer service. Service engines 138 and 166 are described in greater detail with reference to FIG. 4. From the remote client 150 user's standpoint, the location of the service engine does not matter.

As shown by line 1, the remote client 150 user inputs a  
20 predetermined Uniform Resource Locator (URL) address for opening the web page managed by the web page engine 133 of the master server 130. As shown by line 2, the web page engine 133 sends at

least one of the applets 136 and web browser configuration data 137 to the web browser 155. From the services offered by the web page, the user selects a particular service corresponding to one of the applets 136. For example, to access e-mail services, the user selects  
5 an e-mail prompt corresponding to an e-mail applet 136.

As shown by line 3, the web browser 155 forwards to the master server 130 a service request for initiating execution of the selected service. As shown by line 4, the master server 130 determines the location of the service and sends the service request  
10 to the appropriate address, i.e., either to the service engine 115 of the local client 110, to the service engine 165 of the local client 160, to the service engine 138 of the master server 130 or to service engine 167 of the other server 166.

To initiate execution of the service request, the master server  
15 130 may use servlets or agents. The appropriate service engine 115, 138, 165 or 167 executes the service and generates responsive data accordingly. As shown by line 5, the service engine 115, 138, 165 or 167 sends the responsive data back to the master server 130 and, as shown by line 6, the master server 130 sends the responsive data  
20 back to the remote client 150.

Since the master server 130 stores the applets 136 and the configuration data 137, the roaming user can access a service via any

computer 110, 130, 150 or 160 which includes an applet-based web browser 155 and which is connected to the master server 130.

Further, because the master server 130 maintains the network addresses of all services, the user need only maintain the URL

5 address of the web page maintained by the web page engine 133.

That is, the user need not maintain the current address of each service.

Although not shown in FIG. 1, a web browser 155 may be placed on a local client 110 or 160. A user can access the web page engine 133 from the local client 110 or 160 to take advantage of the services provided by the master server 130, by the server 166 or even by the local clients 110 or 160. For example, the local client user may access the web page engine 133 and select a particular service which resides on the local client 110. Accordingly, the applets 136 would launch the service on the local client 110 and would provide direct I/O control of the service to the user. Those skilled in the art will recognize that a particular service engine may require the services of other service engines. It will be appreciated that the local client user need not know the location of each service.

20 The local client user need only access the master server 130.

FIG. 2 is a block diagram illustrating details of the remote client 150, which includes a Central Processing Unit (CPU) 210 such as a Motorola Power PC® microprocessor or an Intel Pentium® microprocessor. An input device 220 such as a keyboard and mouse, and an output device 230 such as a Cathode Ray Tube (CRT) display are coupled via a signal bus 240 to CPU 210. A communications interface 250, a data storage device 260, such as Read Only Memory (ROM) and a magnetic disk, and a Random-Access Memory (RAM) 270 are further coupled via signal bus 240 to CPU 210. The communications interface 250 is coupled to the internet 140.

An operating system 280 includes a program for controlling processing by CPU 210, and is typically stored in data storage device 260 and loaded into RAM 270 for execution. Operating system 280 further includes a communications engine 282 for generating and transferring message packets to and from the internet 140 via the communications interface 250. Operating system 280 further includes an Operating System (OS) configuration engine 284, which configures the operating system 280 based on OS configuration data 137 such as TCP protocol data, domain name server addresses, etc. received from the master server 130.

Operating system 280 further includes a web browser 155 as described with reference to FIG. 1. The web browser 155 includes a

Web Browser (WB) configuration engine 288, which configures the web browser 155 based on WB configuration data 137 such as home page addresses, bookmarks, caching data, user preferences, etc.

received from the master server 130. The web browser further

5 includes an applet engine 290 for handling the execution of downloaded applets 294. The applet engine 290 includes an Applet Engine (AE) configuration engine 292, which configures the applet engine 290 based on AE configuration data 137 received from the master server 130. The applet engine 290 further includes applet-specific configuration data 296 received from the master server 130. For example, for the e-mail applet 294, e-mail applet configuration data 296 may include a user's e-mail address, name, preferred signature block, as well as customizable user interface parameters.

15 FIG. 3A is a block diagram illustrating details of the master server 130, which includes a Central Processing Unit (CPU) 310 such as a Motorola Power PC<sup>®</sup> microprocessor or an Intel Pentium<sup>®</sup> microprocessor. An input device 320 such as a keyboard and mouse, and an output device 330 such as a Cathode Ray Tube (CRT) display  
20 are coupled via a signal bus 340 to CPU 310. A communications interface 350, a data storage device 360, such as Read Only Memory (ROM) and a magnetic disk, and a Random-Access Memory (RAM)

370 are further coupled via signal bus 340 to CPU 310. The communications interface 350 is coupled between the internet 140 and the local network 120.

An operating system 380 includes a program for controlling processing by CPU 310, and is typically stored in data storage device 360 and loaded into RAM 370 for execution. Operating system 380 further includes a communications engine 382 for generating and transferring message packets via the communications interface 350 to and from the internet 140 and to and from local network 120.

Operating system 380 also includes a web page engine 133 for maintaining a web page and for forwarding the applets 136 and the configuration data 137 to the remote client 150.

Operating system 380 further includes an applet host engine 383 for managing and responding to the execution of downloaded applets 288. It will be appreciated that, to respond to the execution of the applets 288, the applet host engine 383 may execute corresponding servlets 384 or forward corresponding agents 386 for execution on the appropriate local client 110 or 160. Operating system 380 may further include the service engine 138 for providing the third service to the user. Service engine 138 is described in greater detail with reference to FIG. 4.

FIG. 3B is a block diagram illustrating details of the configuration data 137. Configuration data 137 includes operating system 280 settings 392 such as TCP protocol data and the domain name server address; web browser 155 settings 392 such as home page address, bookmarks and caching data; applet engine 290 settings 392; and applet configuration data 296 such as the user's e-mail address, name and signature block. It will be appreciated that applet-specific configuration data 296 is needed since the service may not be located on the user's own local client 110 or 160. Configuration data 137 further includes predetermined user preferences 394 such as font, window size, text size, etc.

Configuration data 137 further includes the services 396 which will be provided to the user. Services 396 include a list of registered user's and each user's desired services 396, which specify each user's set of downloaded applets 294. Configuration data 137 further includes service addresses 398 specifying the location of each of the services 396 accessible via the master server 130.

FIG. 4 is a block diagram illustrating details of a local client 400, which includes a Central Processing Unit (CPU) 410 such as a Motorola Power PC® microprocessor or an Intel Pentium®

microprocessor. Local client 400 is illustrative of local clients 110 and 160. An input device 420 such as a keyboard and mouse, and an output device 430 such as a Cathode Ray Tube (CRT) display are coupled via a signal bus 440 to CPU 410. A communications interface 5 450, a data storage device 460, such as Read Only Memory (ROM) and a magnetic disk, and a Random-Access Memory (RAM) 470 are further coupled via signal bus 440 to CPU 410. The communications interface 450 is coupled to the local network 120.

An operating system 480 includes a program for controlling 10 processing by CPU 410, and is typically stored in data storage device 460 and loaded into RAM 470 for execution. Operating system 480 also includes a communications engine 481 for generating and transferring message packets via the communications interface 450 to and from the internet 140 and to and from local network 120.

15 Operating system 480 further includes a service engine 490, which includes a service interface 482 for receiving and translating service requests generated by the applet 136 corresponding to the user-selected service, a service processor 484 and service data 484 for executing the service request. The service data 484 may include 20 previously-generated documents, database information, etc. It will be appreciated that service engine 490 is similar to the service engine 115, 138, 165 or 167 of local client 110, of master server 130,



of local client 160 or of other server 166. Those skilled in the art will recognize that operating system 480 may optionally include a web browser similar to web browser 155 as described with reference to FIG. 2, even though no web browser is shown within  
5 operating system 480.

FIG. 5 illustrates an example graphical user interface 500 of a URL-addressable HyperText Markup Language (HTML)-based web page, as maintained by the web page engine 133 of the master  
10 server 130. The graphical user interface 500 includes a title 510 "Roam Page," a listing of the provided services 396 and a pointer 570 for selecting one of the provided services 396. As illustrated, the provided services may include an e-mail service 520, a calendaring service 530, an internet access service 540, a paging service 550 and  
15 a fax sending service 560. Although not shown, other services such as bookmaking, QuickCard™, etc. may be included on the web page.

FIG. 6 is a flowchart illustrating a method 600 for globally accessing a particular computer service. Method 600 begins with  
20 step 610 by the web browser 155 using a URL to open a communications link of the remote client 150 to the web page engine 133 of the master server 130. Upon opening the communications

link, the web browser 155 in step 620 downloads configuration data 388 from the master server 130, which in step 630 the remote client 150 uses to configure itself. Step 630 includes using the OS configuration engine 282 to configure the operating system 280, 5 using the WB configuration engine to configure the web browser 155, and using the AE configuration engine 288 to configure the applet engine 290.

The applet engine 290 of web browser 155 in step 640 downloads at least one applet 294 from the applets 136 of master 10 server 130. Based on the configuration data 137 and on the downloaded applets 288, the web browser 155 in step 650 generates and displays a web page on the remote client output device 230. The remote client 150 user in step 660 can use the remote client input device 220 to select a particular one of the services 396 offered by 15 the web page. Selection of a service causes the applet engine 290 to connect to or execute the applet 294 corresponding to the selected service 396.

The corresponding applet 294 in step 670 causes the appropriate service engine 490 to execute the selected service 396. 20 Step 670 is described in greater detail with reference to FIGs. 7 and 8. The appropriate service engine 490 in step 680 executes the service request and accordingly provides service access to the

remote client 150 user. Step 680 is described in greater detail with reference to FIG. 9.

FIG. 7 is a flowchart illustrating details of step 670, which

5 begins with step 710 by the corresponding applet 294 forwarding a service request to a corresponding servlet 384 on master server 130. The servlet 384 in step 720 compares the service request with the service addresses 398 stored in the master server 130 to retrieve the service address 398 corresponding to the requested service 396.

10 The servlet 384 in step 730 uses the service address 398 to forward the service request to the service interface 482 of the appropriate service engine 490. The service interface 482 in step 740 receives and initiates execution of the service 396 by the appropriate service engine 490.

15 The service interface 482 in step 750 informs the servlet 384 of the initiation of the service 396. Accordingly, the servlet 384 in step 760 acts as a proxy for the executing applet 294 and in step 770 informs the applet 294 of the initiation of the service 396. The applet 294 in step 780 acts as the Input/Output (I/O) interface to the

20 service 396 (via the servlet 384). Acting as I/O interface includes using the remote client 150 output device 230 to display responsive data received from the service engine 490, using remote client 150

input device 220 to forward instructions to the service engine 490, and using the communications engine 282 and the communications interface 250 to packet and exchange data with the service engine 490.

5

FIG. 8 is a flowchart illustrating alternative details of step 670, which begins with step 810 by applet 294 requesting the master server 130 to open a direct communications link with the appropriate service engine 490. The master server 130 in step 820  
10 compares the service request with service addresses 398 stored in the master server 130 to retrieve the proper service address 398 and sends the service address and other service-specific configuration data to the applet 294. The remote client 150 in step 830 opens the direct link to the service.

15 When the direct connection has been established, the applet 294 in step 840 forwards the service request to the service interface 482 of the service engine 490. The service interface 482 in step 850 causes the service engine 490 to initiate execution of the requested service 396, and in step 860 informs the applet 294 of the initiation  
20 of the service 396 by the service engine 490. The applet 294 in step 870 acts as the I/O interface to the service 396.

FIG. 9 is a flowchart illustrating details of step 680, which begins with step 910 by the CPU 310 or 410 of the master server 130, the local client 110 or the local client 160 loading the respective service engine 490 into RAM 370 or 470. The CPU 310 or 410 in step 920 initiates execution of the service engine 490, which in step 930 processes the service request and accordingly generates and forwards display data and I/O requests as responsive data to the remote client 150. For example, if the user requests access to a database of information, the service engine 490 in step 930 will retrieve and send the requested data and a prompt for additional instructions back to the user. The service engine 490 in step 940 waits for instruction from the remote client 150 user. As illustrated by step 960, steps 920-960 repeat until the user instructs the system to quit.

For example, if a user wants to send an e-mail message to a colleague but maintains an e-mail application program and an e-mail address database only on his local work computer, then using the system of the present invention the user can operate the e-mail application program and can access the e-mail address database from a remote computer 150. That is, either a master server 130 or the

local work computer 110 includes a web page engine 133 maintaining a roaming-access web page. The user locates a remote computer 150 operating an applet-enabled web browser 155, and inputs the roaming-access web page URL address.

5           The web page engine 133 confirms the user's access privileges.

If access is granted, then the web browser 155 downloads information for displaying the web page, information for configuring the operating system 280 and the web browser 155 according to the user's predetermined specifications. The web browser 155 further  
10       downloads a predetermined set of service applets 294 which include an e-mail applet 294. The user selects the e-mail applet 294, for example, by clicking a mouse button while the mouse pointer 570 is over an e-mail applet prompt 520. Accordingly, the web browser 155 executes the e-mail applet 294, which includes retrieving the e-  
15       mail application program address 398 and sending an e-mail access service request to the service interface 482. The service interface 482 initiates the e-mail application program 484 and directs Input/Output (I/O) control to the remote computer 150 user.

20           The foregoing description of the preferred embodiments of the invention is by way of example only, and other variations of the above-described embodiments and methods are provided by the

present invention. For example, although the remote client 150 of the has been described as a personal computer, the remote client 150 can alternatively be a Java<sup>TM</sup> workstation or a network computer.

Although the remote client 150 has been described as downloading

5 all selectable applets 294 from the master server 130, the remote client 150 can alternatively download selectable service prompts and can then download from the master server 130 only the applet

corresponding to the selected service. Further, although the remote

client 150 has been described as downloading all the configuration

10 data 137 in one request, the remote client 150 may use several

requests to download the configuration data 137. Still further,

although services are described as being performed by one service

engine 490, a service may be provided by multiple service engines

490. Still even further, components of this invention may be

15 implemented using a programmed general purpose digital computer,

using application specific integrated circuits, or using a network of

interconnected conventional components and circuits. The

embodiments described herein have been presented for purposes of

illustration and are not intended to be exhaustive or limiting. The

20 system is limited only by the following claims:

WHAT IS CLAIMED IS:

1 1. A method comprising the steps of:  
2 establishing a communications link between a client and a  
3 server;  
4 receiving applet information by the client from the server;  
5 establishing a communications link between the client and a  
6 service using the applet information; and  
7 directing user interface I/O control of the service to the client  
8 using the applet information.

1 2. The method of claim 1, wherein the step of establishing a  
2 communications link between the client and the server includes  
3 using a URL.

1 3. The method of claim 1, wherein the step of establishing a  
2 communications link between the client and the server includes  
3 opening an internet protocol connection between the client and the  
4 server.

1 4. The method of claim 1, wherein the step of establishing a  
2 communications link between the client and the server includes



3 confirming user access privileges for communicating between the  
4 client and the server.

1 5. The method of claim 1, further comprising the steps of  
2 receiving configuration data by the client; and  
3 configuring attributes of the client using the configuration data  
4 to provide a user-specific user interface to the client.

1 6. The method of claim 1, wherein the step of establishing a  
2 communications link between the client and the service includes  
3 accessing the service using a proxy.

1 7. The method of claim 1, wherein the step of directing user  
2 interface I/O control includes directing user interface I/O control of  
3 the service to an applet on the client.

1 8. A method comprising the steps of:  
2 establishing a communications link between a client and a  
3 server;  
4 downloading configuration data from the master server to the  
5 client;

6           configuring attributes of the client using the configuration data;  
7           establishing a communications link between the client and a  
8   service using the configured client; and  
9           directing user interface I/O control of the service to the  
10   configured client.

1   9.    The method of claim 8, wherein the step of establishing a  
2   communications link between the client and the server includes  
3   using a URL.

1   10.   The method of claim 8, wherein the step of establishing a  
2   communications link between the client and the server includes  
3   opening an internet protocol connection between the client and the  
4   server.

1   11.   The method of claim 8, wherein the step of establishing a  
2   communications link between the client and the server includes  
3   confirming user access privileges for communicating between the  
4   client and the server.

1   12.   The method of claim 8, further comprising the steps of

2 receiving configuration data by the client; and  
3 configuring attributes of the client using the configuration data  
4 to provide a user-specific user interface to the client.

1 13. The method of claim 8, wherein the step of establishing a  
2 communications link between the client and the service includes  
3 accessing the service using a proxy.

1 14. The method of claim 8, wherein the step of directing user  
2 interface I/O control includes directing user interface I/O control of  
3 the service to an applet on the client.

1 15. A system comprising:  
2 means for establishing a communications link between a client  
3 and a server;  
4 means for receiving applet information by the client from the  
5 server;  
6 means for establishing a communications link between the  
7 client and a service using the applet information; and  
8 means for directing user interface I/O control of the service to  
9 the client using the applet information.

1 16. The system of claim 15, wherein the means for establishing a  
2 communications link between the client and the server includes  
3 means for using a URL.

1 17. The system of claim 15, wherein the means for establishing a  
2 communications link between the client and the server includes  
3 means for opening an internet protocol connection between the client  
4 and the server.

1 18. The system of claim 15, wherein the means for establishing a  
2 communications link between the client and the server includes  
3 means for confirming user access privileges for communicating  
4 between the client and the server.

1 19. The system of claim 15, further comprising  
2 means for receiving configuration data by the client; and  
3 means for configuring attributes of the client using the  
4 configuration data to provide a user-specific user interface to the  
5 client.

1 20. The system of claim 1, wherein the means for establishing a  
2 communications link between the client and the service includes  
3 means for accessing the service using a proxy.

1 21. The system of claim 1, wherein the means for directing user  
2 interface I/O control includes means for directing user interface I/O  
3 control of the service to an applet on the client.

1 22. A system comprising:

2 means for establishing a communications link between a client  
3 and a server;

4 means for downloading configuration data from the master  
5 server to the client;

6 means for configuring attributes of the client using the  
7 configuration data;

8 means for establishing a communications link between the  
9 client and a service using the configured client; and

10 means for directing user interface I/O control of the service to  
11 the configured client.

1 23. The system of claim 22, wherein the means for establishing a  
2 communications link between the client and the server includes  
3 means for using a URL.

1 24. The system of claim 22, wherein the means for establishing a  
2 communications link between the client and the server includes  
3 means for opening an internet protocol connection between the client  
4 and the server.

1 25. The system of claim 22, wherein the means for establishing a  
2 communications link between the client and the server includes  
3 means for confirming user access privileges for communicating  
4 between the client and the server.

1 26. The system of claim 22, further comprising  
2 means for receiving configuration data by the client; and  
3 means for configuring attributes of the client using the  
4 configuration data to provide a user-specific user interface to the  
5 client.

1 27. The system of claim 22, wherein the means for establishing a  
2 communications link between the client and the service includes  
3 means for accessing the service using a proxy.

1 28. The system of claim 22, wherein the means for directing user  
2 interface I/O control includes means for directing user interface I/O  
3 control of the service to an applet on the client.

1 29. A computer-readable medium for storing a program for  
2 causing a computer to perform the steps of:  
3       establishing a communications link between a client and a  
4 server;  
5       receiving applet information by the client from the server;  
6       establishing a communications link between the client and a  
7 service using the applet information; and  
8       directing user interface I/O control of the service to the client  
9 using the applet information.

1 30. A computer-readable medium for storing a program for  
2 causing a computer to perform the steps of:  
3       establishing a communications link between a client and a  
4 server;

5        downloading configuration data from the master server to the  
6        client;

7        configuring attributes of the client using the configuration data;

8        establishing a communications link between the client and a  
9        service using the configured client; and

10       directing user interface I/O control of the service to the  
11       configured client.

1       31. A system comprising:

2       a communications engine for establishing a communications  
3       link with a server;

4       a browser, coupled to the communications engine, for receiving  
5       applet information corresponding to a service from the server; and

6       an applet engine for using the applet information to control  
7       user interface I/O of the service.

1       32. The system of claim 31, wherein the communications engine  
2       establishes a communications link between the client and the server  
3       using a URL.

1       33. The system of claim 31, wherein the communications engine  
2       establishes a communications link between the client and the server



3 by opening an internet protocol connection between the client and  
4 the server.

1 34. The system of claim 31, wherein the communications engine  
2 confirms user access privileges for communicating between the client  
3 and the server before establishing a communications link between  
4 the client and the server.

1 35. The system of claim 31, wherein the communications engine  
2 receives configuration data, and further comprising a configuration  
3 engine for configuring attributes of the client using the configuration  
4 data to provide a user-specific user interface to the client.

1 36. The system of claim 31, wherein the applet engine establishes  
2 a communications link between the client and the service via a  
3 proxy.

1 37. The system of claim 31, further comprising an applet and  
2 wherein the applet engine uses the applet to direct user interface I/O  
3 control of the service to the applet.

1 38. A system comprising:  
2 downloadable applet information corresponding to  
3 downloadable applets for enabling a client to control user interface  
4 I/O of a service;  
5 a communications engine for downloading the applet  
6 information across a communications link to the client; and  
7 an applet host engine for enabling a downloaded one of the  
8 downloadable applets to direct user interface I/O control of the  
9 service to the client.

1 39. The system of claim 38, further comprising configuration data  
2 for configuring the client to provide the client with a consistent user  
3 interface for controlling the service.

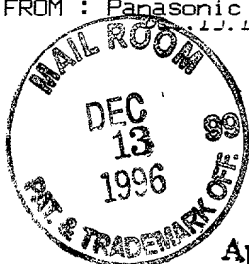
1 40. The system of claim 38, wherein the communications engine  
2 establishes a communications link with the client across an internet.

1 41. The system of claim 38, wherein the communications engine  
2 confirms user access privileges for receiving communications from  
3 the client.

- 1 42. The system of claim 38, wherein the applet host engine
- 2 provides a proxy service to direct user interface I/O control to the
- 3 client.

SYSTEM AND METHOD FOR GLOBALLY ACCESSING COMPUTERSERVICESABSTRACT OF THE DISCLOSURE

5           A system for communicating through a computer network. The system includes a communications engine for establishing a communications link with a server, a browser, coupled to the communications engine, for receiving applet information corresponding to a service from the server, and an applet engine for  
10   using the applet information to control user interface I/O of the service. The communications engine may confirm user access privileges before establishing a communications link between the client and the server. The communications engine receives configuration data, and configures client attributes using the  
15   configuration data to provide a user-specific user interface to the client. It will be appreciated that the system may be stored on a floppy disk or hard drive.



Atty. Dkt No. 564

Applicants or Patentees: Riggins, et al.  
Serial or Patent No.: Unknown  
Filed or Issued: Herewith  
For: System and Method for Globally Accessing Computer Services

**VERIFIED STATEMENT (DECLARATION) CLAIMING  
SMALL ENTITY STATUS  
(37 CFR 1.9 (f) and 1.27 (c)) - SMALL BUSINESS CONCERN**

I hereby declare that I am:

- ☐ the owner of the small business concern identified below;  
☒ an official of the small business concern empowered to  
act on behalf of the concern identified below:

NAME OF CONCERN RoamPage, Inc.  
ADDRESS OF CONCERN 156 East Dana Street Mountain View, CA 94041

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.2, and reproduced in 37 CFR 1.9 (d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled "System and Method for Globally Accessing Computer Services", by inventors Riggins, et al. described in

- ☒ the specification filed herewith.  
☐ application serial no. \_\_\_\_\_ filed \_\_\_\_\_  
☐ patent no. \_\_\_\_\_ issued \_\_\_\_\_

006604 00259280

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below\* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e). \*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28 (b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of the Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING Hong O. BuiTITLE OF PERSON Vice President of Product DevelopmentADDRESS 10250 Parkwood Drive #4, Cupertino, CA 95014SIGNATURE DATE 12/13/96

03755307 121996



ATTORNEY'S DOCKET NO.: 564

**DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled "System and Method for Globally Accessing Computer Services," the specification of which (check one):

☒ is attached hereto.

☐ I was filed on \_\_\_\_\_ as U.S. Application No. \_\_\_\_\_ or PCT International Application No. \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment specifically referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate, or §365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT International application, having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Claimed

_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

I hereby claim the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below.

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

\_\_\_\_\_  
(Status -- patented, pending, abandoned)

\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

\_\_\_\_\_  
(Status -- patented, pending, abandoned)

**POWER OF ATTORNEY:** I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

5 John S. Ferrell, Reg. No. 34,593; J. Eppa Hite, Reg. No. 30,266;  
Leroy D. Maunu Reg. No. 35,274; Francis H. Lewis, Reg. No. 27,684;  
and Gregory J. Koerner, Reg. No. 38,519

**SEND ALL CORRESPONDENCE TO:**

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2225 East Bayshore Road, Suite 200  
Palo Alto, CA 94303  
TEL: (415) 812-3432  
FAX: (415) 812-3444



I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of first inventor: Mark D. Riggins 1-CC  
Inventor's signature *Mark D. Riggins* Dated: 12-13-96  
Residence 1300 Ranhurst Road, McLeansville, NC 27301 1C  
Post Office Address same Citizenship USA

Full name of second joint inventor: R. Stanley Bailes 2-CC  
Inventor's signature *R. Stanley Bailes* Dated: 12/13/96  
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Full name of third joint inventor: Hong O. Bui 3-CC  
Inventor's signature *Hong O. Bui* Dated: 12/13/96  
Residence 10250 Parkwood Drive #4, Cupertino, CA 95014 CA  
Post Office Address same Citizenship USA

Full name of fourth joint inventor: David I. Cowan  
Inventor's signature \_\_\_\_\_ Dated: \_\_\_\_\_  
Residence 3000 Sand Hill Road, #3-225, Menlo Park, CA 94043  
Post Office Address same Citizenship USA

Full name of fifth joint inventor: Daniel I Mendez 5-00  
Inventor's signature [Signature] Dated: 12/13/96  
Residence 801 Church Street, #1121, Mountain View, CA 94041 CT  
Post Office Address same Citizenship USA

Full name of sixth joint inventor: Mason Ng 6-00  
Inventor's signature [Signature] Dated: 12/13/96  
Residence 217 Ada Avenue, #11, Mountain View, CA 94043 CT  
Post Office Address same Citizenship USA

Full name of seventh joint inventor: Sean Michael Quinlan 7-00  
Inventor's signature [Signature] Dated: 12-13-96  
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DEC. 13. 1996 5:29 PM P 6

Post Office Address same Citizenship USA

Post Office Address same Citizenship USA

Post Office Address same Citizenship USA

ATTORNEY'S DOCKET NO.: 564

## DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

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☒ is attached hereto.

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\_\_\_\_\_  
(Application Number)

\_\_\_\_\_  
(Filing Date)

\_\_\_\_\_  
(Status -- patented, pending, abandoned)

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Leroy D. Maunu Reg. No. 35,274; Francis H. Lewis, Reg. No. 27,684;  
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Inventor's signature *Mark D. Riggins* Dated: 12-13-96

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Inventor's signature *R. Stanley Bailes* Dated: 12/13/96

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Post Office Address same Citizenship USA

Full name of third joint inventor: Hong O. Bui

Inventor's signature *Hong O. Bui* Dated: 12/13/96

Residence 10250 Parkwood Drive #4, Cupertino, CA 95014

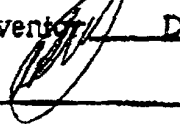
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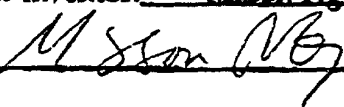
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Full name of fourth joint inventor: David I. Cowan

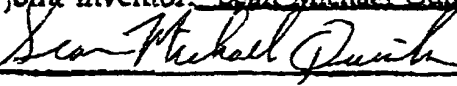
Inventor's signature *David I. Cowan* Dated: 12/16/96


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Post Office Address same Citizenship USA

Full name of fifth joint inventor: Daniel I Mendez  
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Inventor's signature  Dated: 12-13-96  
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Post Office Address same Citizenship USA

Full name of eighth joint inventor: Prasad Wagle  
Inventor's signature  Dated: 12/13/96  
Residence 2831 Pruneridge Avenue, Santa Clara, CA 95051  
Post Office Address same Citizenship India

Full name of ninth joint inventor: Christine C. YingInventor's signature [Signature] Dated: 12-13-96Residence 1204 Moonsail Lane, Foster City, CA 94404Post Office Address same Citizenship USAFull name of tenth joint inventor: Christopher R. ZuleegInventor's signature Christopher R. Zuleeg Dated: 12/13/96Residence 5524 Blossom Vista Avenue, San Jose, CA 95124Post Office Address same Citizenship USAFull name of eleventh joint inventor: Ioanna A. Aptekar-StroberInventor's signature Ioanna Aptekar Strober Dated: 12/16/96Residence 3000 Sand Hill Road, #3-225, Menlo Park, CA 94043Post Office Address same Citizenship USA

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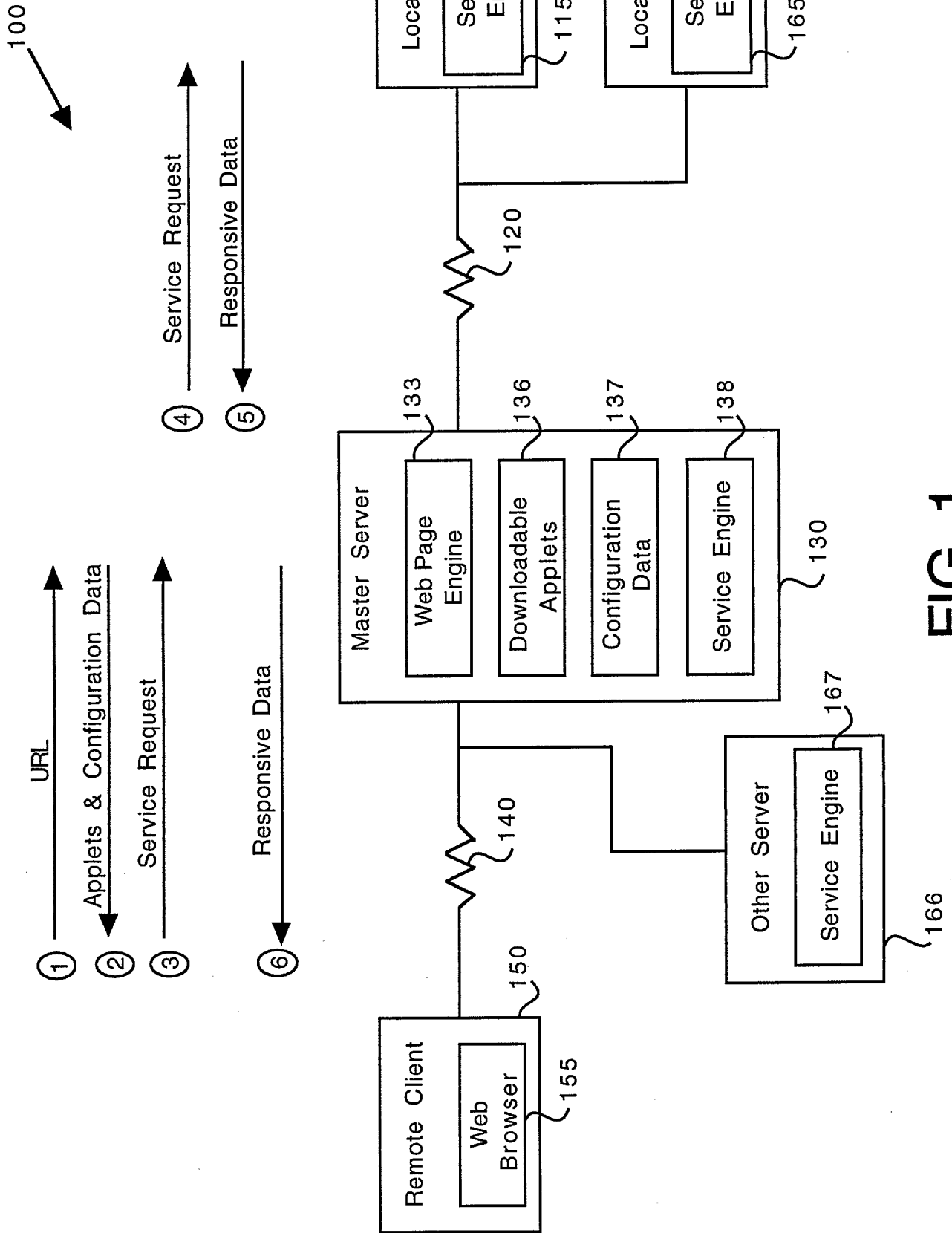


FIG. 1

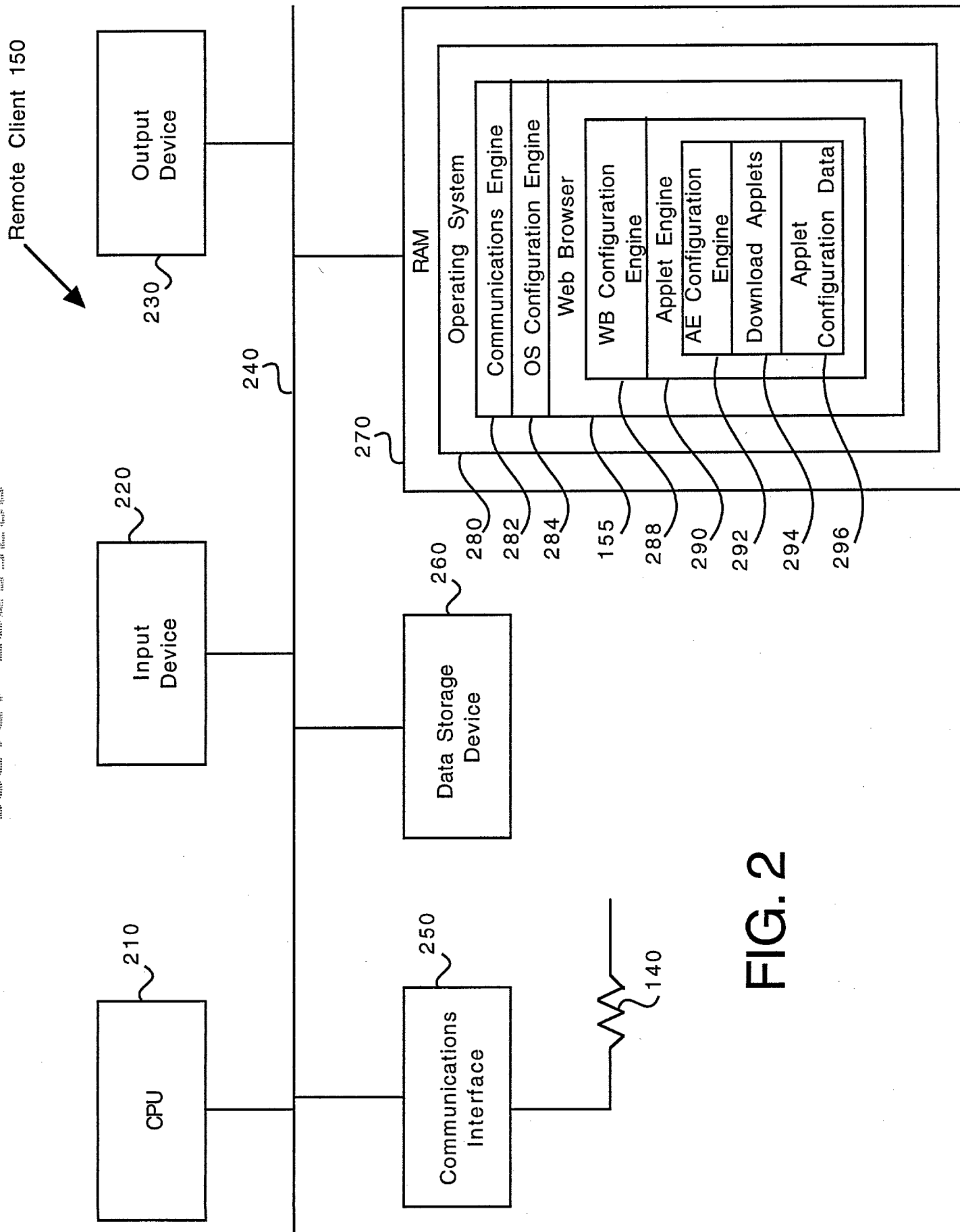


FIG. 2

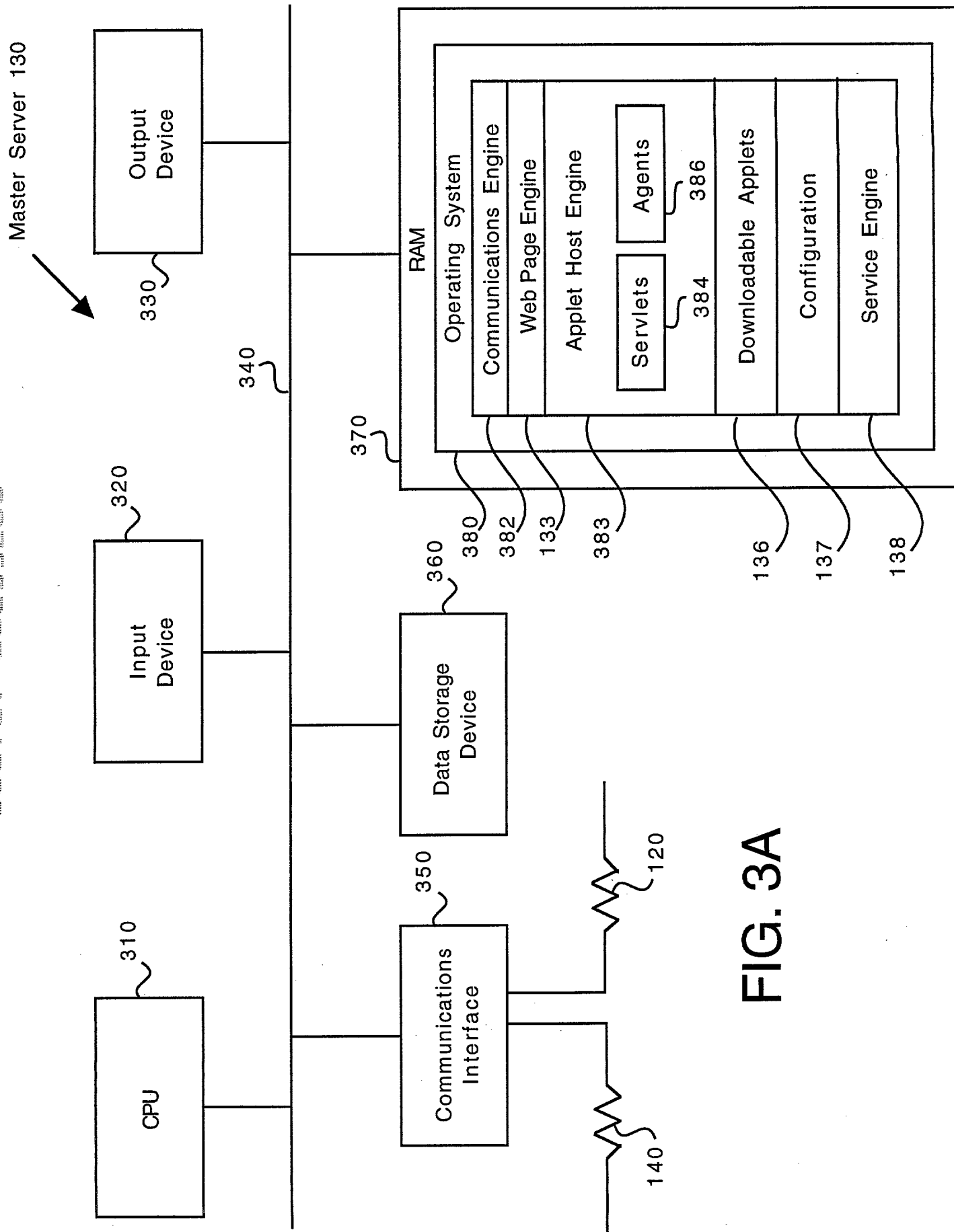


FIG. 3A

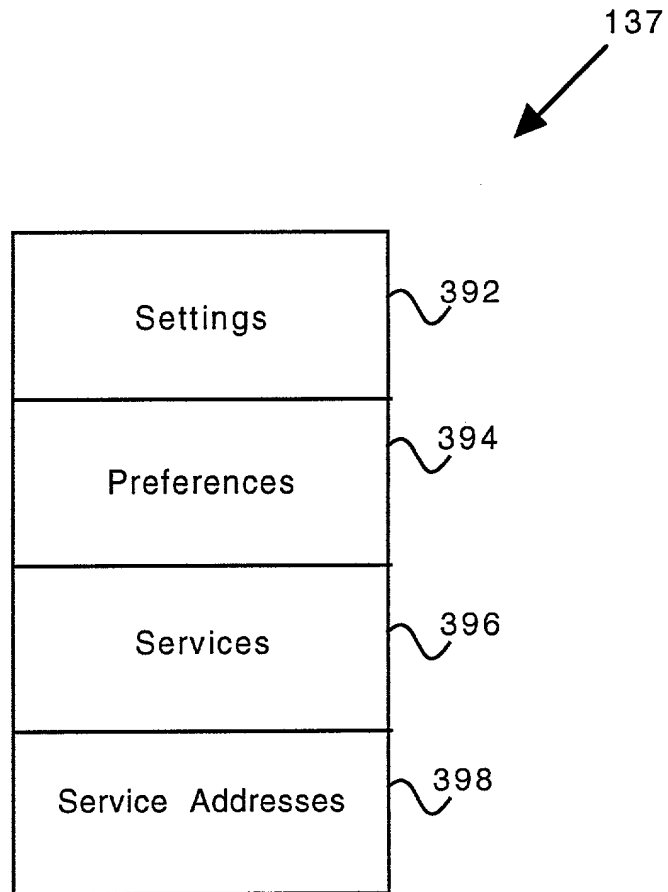


FIG. 3B

Patent Application No. 2003/009230

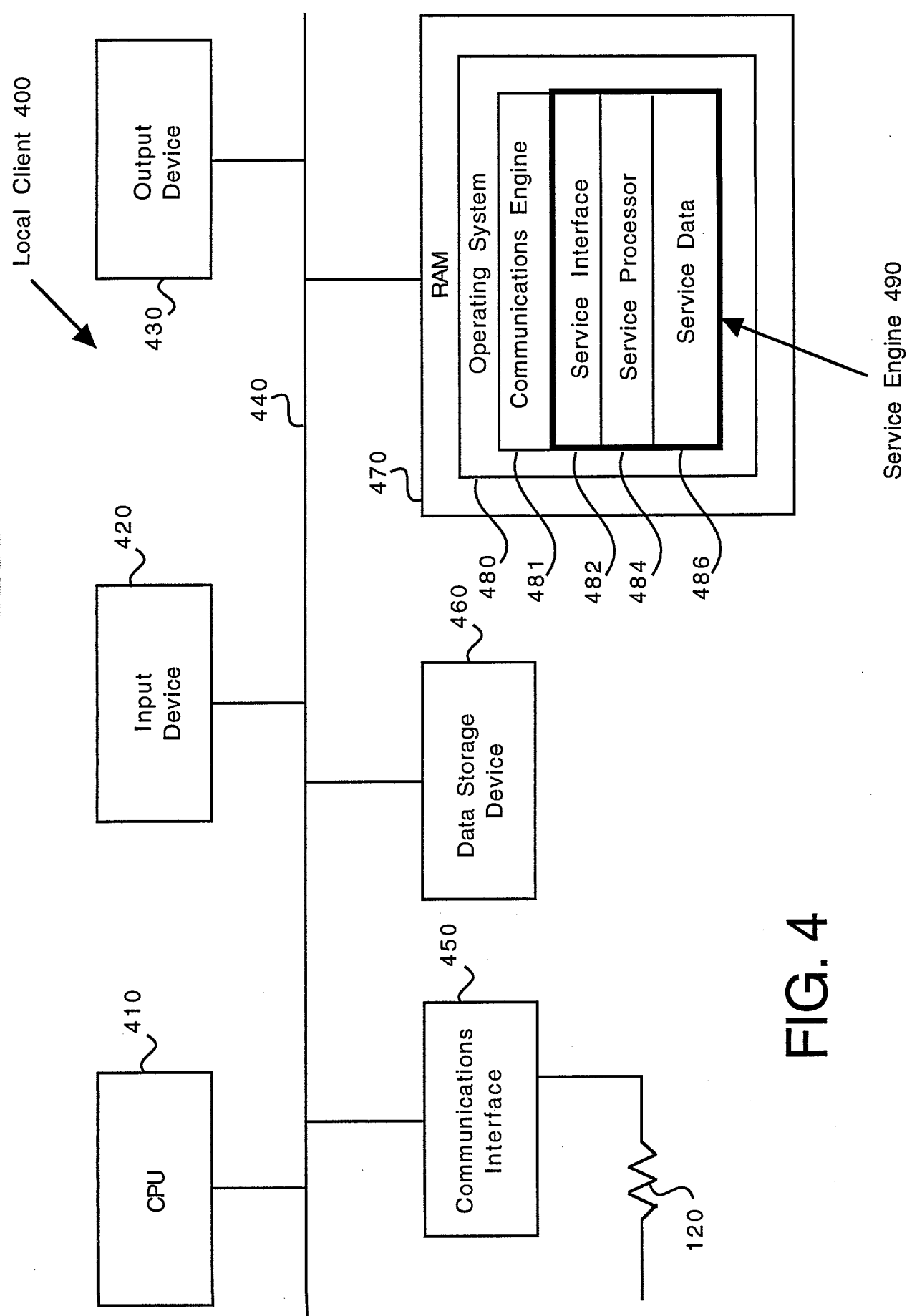
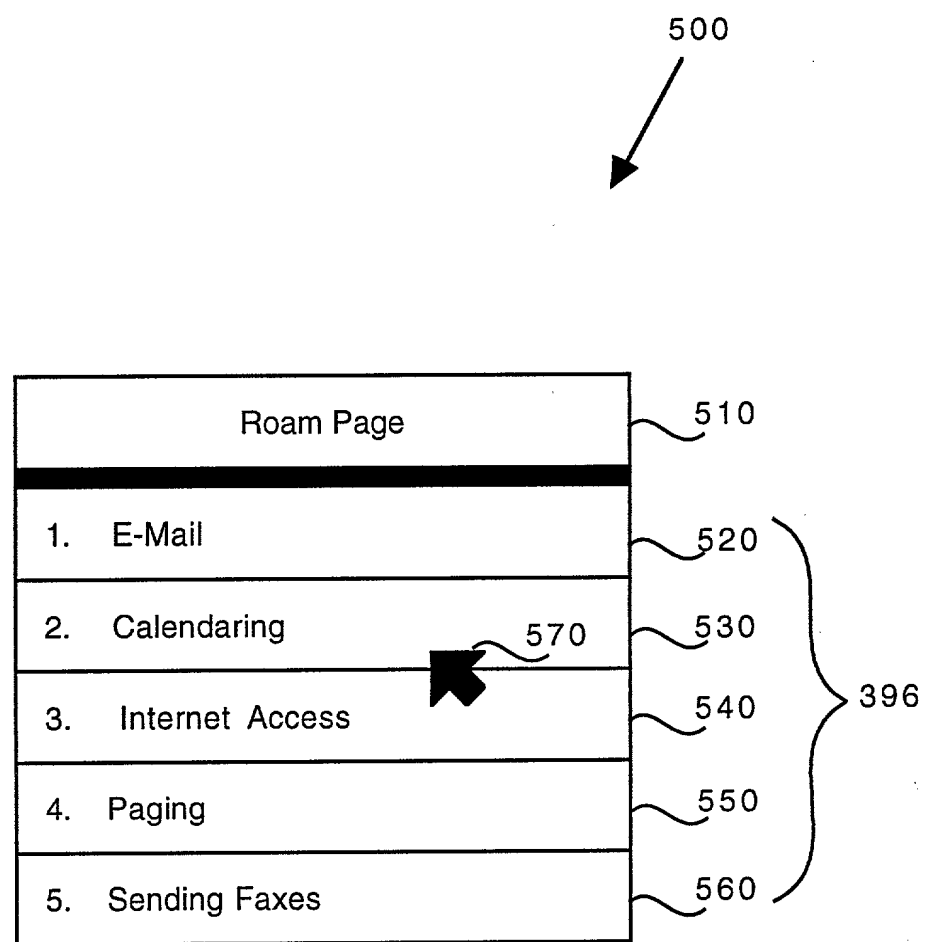


FIG. 4



**FIG. 5**

(Roam Page Screen Shot)

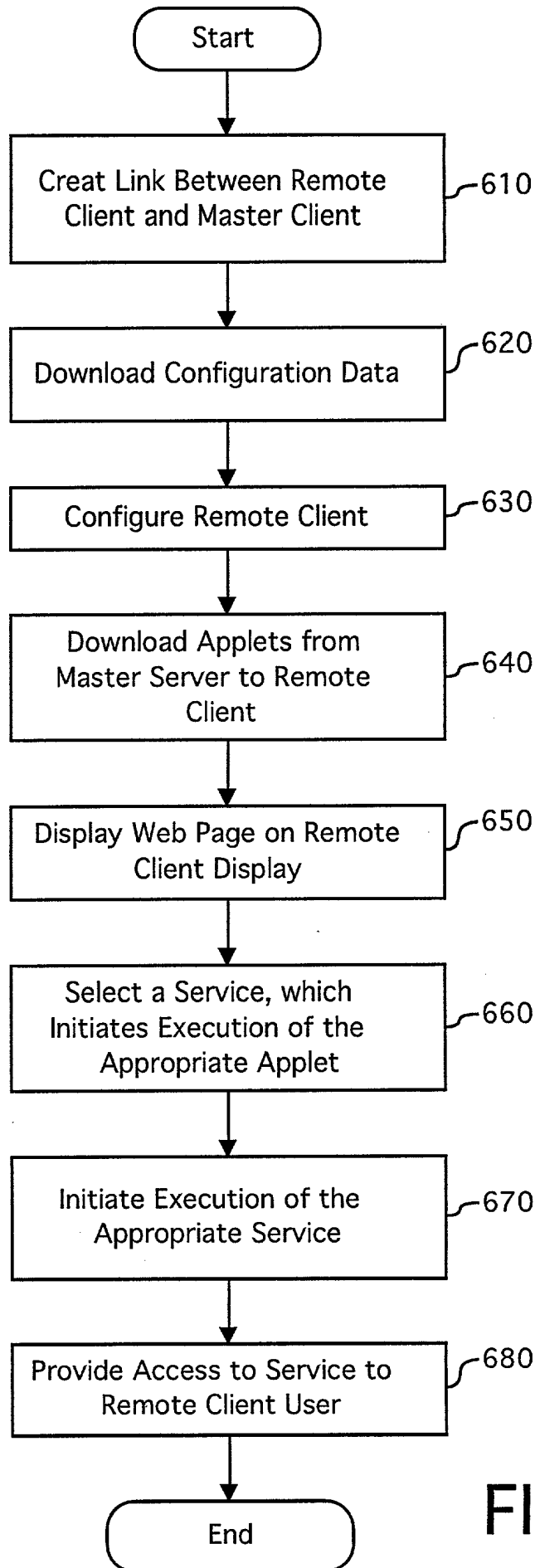


FIG. 6

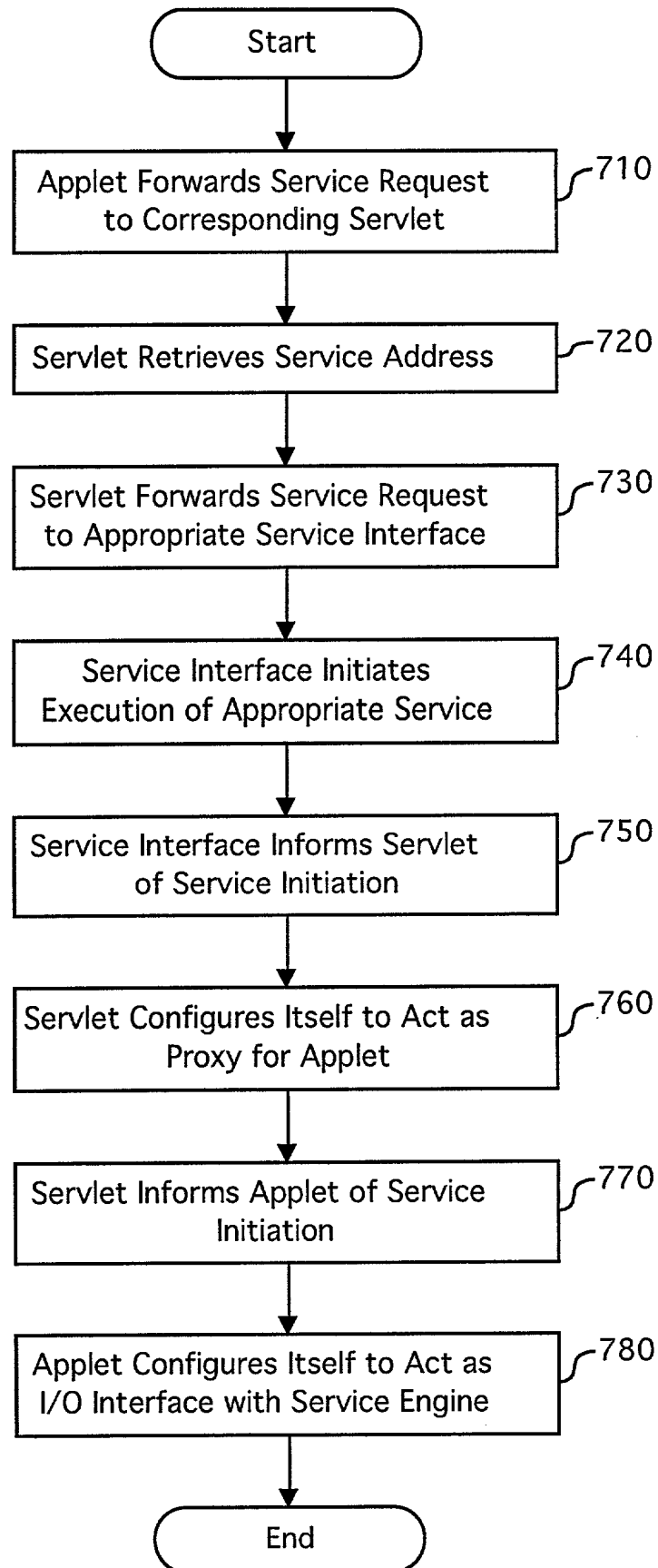


Fig. 7



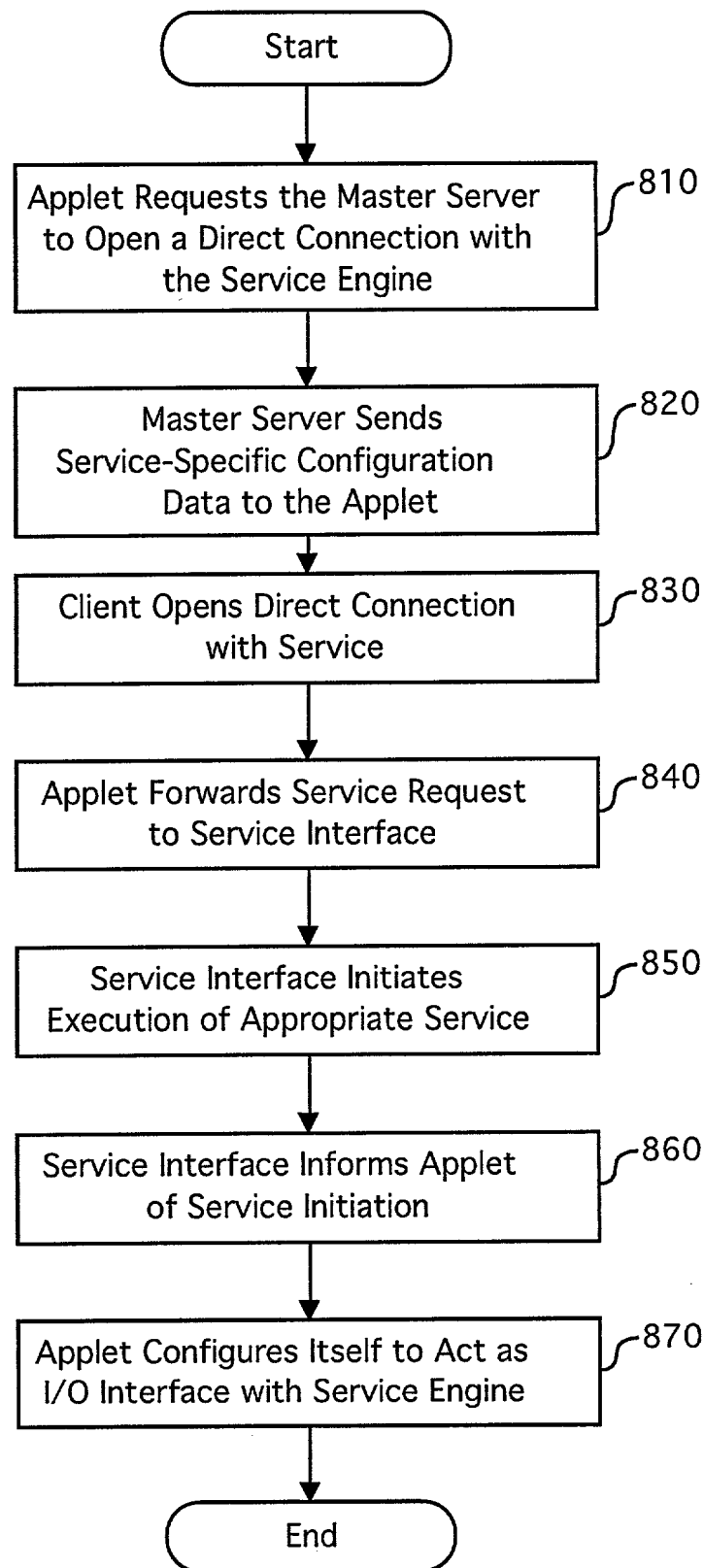


Fig. 8

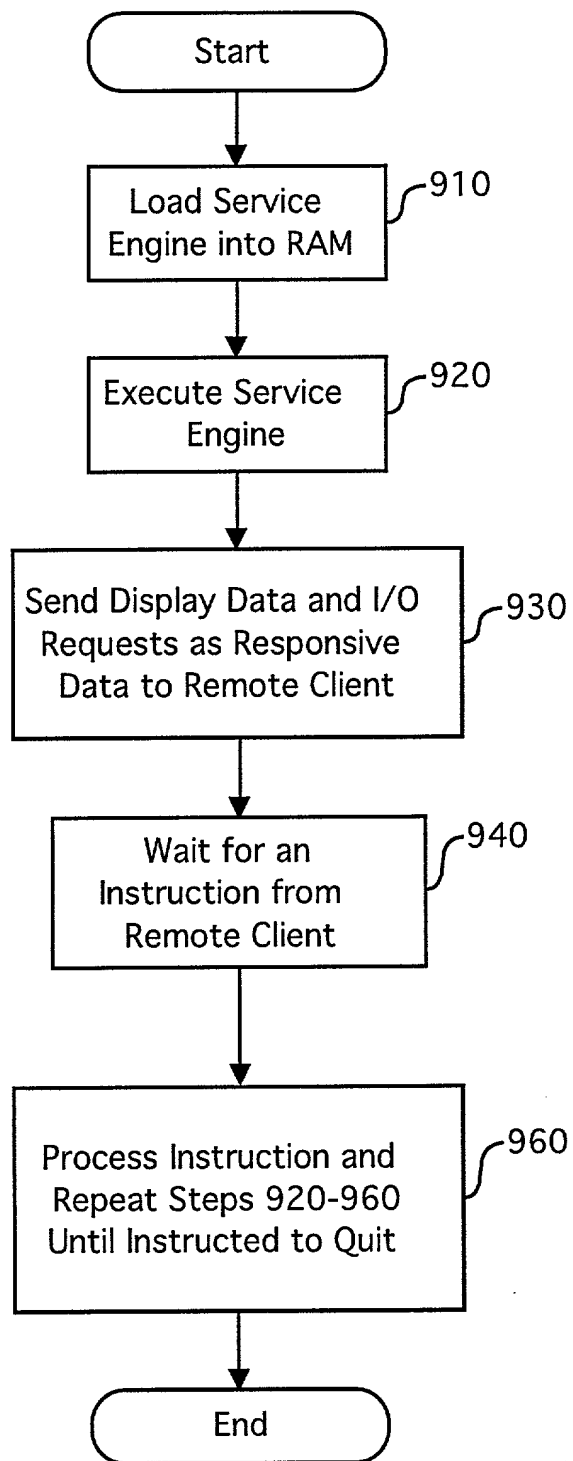


FIG. 9